

Work Order ID 87562

July-19-12 1:22:57 PM

\*87562\*

Page 1

Item ID: D212-664-101TRN

Accept

\*N900040100\*

Setup

Start \*NS1\*

Revision ID:

Stop

\*NS2\*

Item Name: Crosstube Turning Detail

Start Date: 7/20/12 Start Qty: 1.00 \*1\*

Required Date: 8/17/12 Req'd Qty: 1.00 \*1\*

Cust Item ID:

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/07/20 Tooling:

Date:

Run

Start \*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D212-664-141	Rev D (DEO)

100 0.00

\*100\* MORI SEIKI CNC LATHE LARGE

Mori Seiki

Mori Seiki CNC Lathe Large

Memo 0.00

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA113

2-Turn first side as per Folio FA113

3-Blend transition lines only, \*\*do not sand whole tube\*\*:

FOLIO REV: AA

DWG REV: D

\*Use mill bastard file, brush file repeatedly with file card.

\*Do not use sandpaper coarser than 320 grit.

Pb >

110

QCI- Inspect dimensions to dimension sheet 0.00

\*110\*

QC

Quality Control

Memo 0.00

1 / KC 12-8-4

NCR: Yes /  No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA:

Date: 17/08/22

QA Closed:

Date: 01/09/22

Work Order: <u>87562</u>	<b>DISPOSITION</b>	<b>AGAINST DEPARTMENT/PROCESS</b>					
Part No. <u>D212-664-10TEN</u>	Rework <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input checked="" type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>		
NCR No. <u>12-1727</u>	Scrap <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Quality <input type="checkbox"/>		
	Use-as-is <input checked="" type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>		
	Work Order Update <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>			

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling	12/08/13	10D	1	Cuff is 0.004" below tolerance on O.D.  2.498" O.D. dim is 2.507"	2/28/13	Acceptable-	DAS 16 9-8	DAS 16 9-8	DAS 16 9-8
Operator									
Material									
Setup									
Other									
Process									
Supplier									
Training									
Unapproved									

## FAULT CATEGORY

Landing Gear	General				
Bending	Bend				
Centre Not Concentric to O/S	BOM/Route				
Cracks	Broken/Damaged				
Crushed/Crimped.	Burrs				
Cuffs	Contamination				
Heat Treat	Countersink				
Inspection Strip in Tube	Cut Too Short				
Ripples in Bend	Drill Holes				
Torque Waves in Extrusion	Drawing				
Turning Sequence	Finish				
Wave/Twist in Tube	Folio				
	Grain				
	Hardware				
	Inspection Incomplete				
	Instructions Incomplete/Unclear				
	Maintenance				
	Mislabeled				
	Misread				
	Offset				
	Out of Calibration				
	Out of Sequence				
	Outside Dimensions				

**Work Order ID 87562****\*87562\***

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Item ID: D212-664-101TRN

Accept

**\*N900040100\***

Setup

Start

**\*NS1\***

Revision ID:

Item Name: Crosstube Turning Detail

Stop

**\*NS2\***Start Date: 7/20/12 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 8/17/12 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run

Start

**\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop

**\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

120

**\*120\***

Mori Seiki

Mori Seiki CNC Lathe Large

0.00

MORI SEIKI CNC LATHE LARGE

Memo

0.00

1-Turn second side as per Folio FA113

2-Blend transition lines only, \*\*do not sand whole tube\*\*:

\*Use mill bastard file, brush file repeatedly with file card.

\*Do not use sandpaper coarser than 320 grit.

FOLIO REV: 4ADWG REV: 0

3-Remove sand and plugs

130

**\*130\***

QC

Quality Control

QC1- Inspect dimensions to dimension sheet

0.00

Memo

0.00

+ PERFORM ULTRA SONIC MEASUREMENT

1 P KC 12-8-41 P KC 12-8-4KC 12-8-4

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____			DISPOSITION			AGAINST DEPARTMENT/PROCESS														
			Rework <input type="checkbox"/>	Scrap <input type="checkbox"/>	Use-as-is <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Machining <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Finishing <input type="checkbox"/>	Composite <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Supplier <input type="checkbox"/>	Engineering <input type="checkbox"/>	Quality <input type="checkbox"/>	Other <input type="checkbox"/>
Part No. _____			Work Order Update <input type="checkbox"/>																	
NCR No. _____																				
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance			Initial Chief Eng	Action Description			Sign & Date	Verification			QC Inspector					
Doc/Data																				
Equip/Tooling																				
Operator																				
Material																				
Setup																				
Other																				
Process																				
Supplier																				
Training																				
Unapproved																				
FAULT CATEGORY																				
Landing Gear				General																
<input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped. <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube				<input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio				<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions												
								<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge												
								<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled												
								<input type="checkbox"/> Other												

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Item ID: D212-664-101TRN

Accept

\*N900040100\*

Setup Start

\*NS1\*

Revision ID:

Item Name: Crosstube Turning Detail

Stop

\*NS2\*

Start Date: 7/20/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 8/17/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

140

QC8- Inspect parts - second check

0.00

(DAS  
16  
9-89) / JW

12-8-15

\*140\*

QC

Quality Control

Memo

+ CHECK ULTRA SONIC MEASUREMENT AND ORIENTATION FOR  
BENDING

145

0.00

\*145\*

Crosstubes

Crosstubes

Memo

0.00

GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

Rm 12-8-15

150

0.00

\*150\*

HandFXtube

Hand Finishing Crosstubes

Memo

0.00

1- PRESSURE WASH X-TUBE INSIDE AND OUT

2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE

JW Rm 12-8-19

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order:		DISPOSITION			AGAINST DEPARTMENT/PROCESS						
		Rework	<input type="checkbox"/>	Skid-tube	<input type="checkbox"/>	Crosstube	<input type="checkbox"/>	Water Jet	<input type="checkbox"/>	Engineering	<input type="checkbox"/>
Part No.		Scrap	<input type="checkbox"/>	Machining	<input type="checkbox"/>	Small Fab	<input type="checkbox"/>	Prod. Eng. Coor.	<input type="checkbox"/>	Quality	<input type="checkbox"/>
NCR No.		Use-as-is	<input type="checkbox"/>	Thermoforming	<input type="checkbox"/>	Finishing	<input type="checkbox"/>	Rec/Store/Packaging	<input type="checkbox"/>	Other	<input type="checkbox"/>
Work Order Update			<input type="checkbox"/>	Large Fab	<input type="checkbox"/>	Composite	<input type="checkbox"/>	Supplier	<input type="checkbox"/>		
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											
FAULT CATEGORY											
Landing Gear				General							
				Bending	<input type="checkbox"/>	Grain	<input type="checkbox"/>	Ovalized	<input type="checkbox"/>	Pressure/Forced	
Centre Not Concentric to O/S	<input type="checkbox"/>	BOM/Route	<input type="checkbox"/>	Over/Under tolerance	<input type="checkbox"/>	Temperature/Cure					
Cracks	<input type="checkbox"/>	Broken/Damaged	<input type="checkbox"/>	Part Incorrect	<input type="checkbox"/>	Weld					
Crushed/Crimped.	<input type="checkbox"/>	Burrs	<input type="checkbox"/>	Part Lost/Missing	<input type="checkbox"/>	Wrong Stock Pulled					
Cuffs	<input type="checkbox"/>	Contamination	<input type="checkbox"/>	Part Moved	<input type="checkbox"/>						
Heat Treat	<input type="checkbox"/>	Countersink	<input type="checkbox"/>	Positioned Wrong	<input type="checkbox"/>						
Inspection Strip in Tube	<input type="checkbox"/>	Cut Too Short	<input type="checkbox"/>	Power Loss/Surge	<input type="checkbox"/>						
Ripples in Bend	<input type="checkbox"/>	Drill Holes	<input type="checkbox"/>	Other	<input type="checkbox"/>						
Torque Waves in Extrusion	<input type="checkbox"/>	Drawing	<input type="checkbox"/>		<input type="checkbox"/>						
Turning Sequence	<input type="checkbox"/>	Finish	<input type="checkbox"/>		<input type="checkbox"/>						
Wave/Twist in Tube	<input type="checkbox"/>	Folio	<input type="checkbox"/>		<input type="checkbox"/>						
Outside Dimensions											

Work Order ID 87562

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Item ID: D212-664-101TRN

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Item Name: Crosstube Turning Detail

Stop

\*NS2\*

Start Date: 7/20/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 8/17/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run

Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

160

\*160\*

QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

DAS  
16  
9-8

17/08/20

170

\*170\*

Packaging

Packaging

0.00

Mo

12/8/20

Packaging

Memo  
Identify and Stock in kanban rack  
Location: LG

0.00

180

QC21- Final Inspection - Work Order Release

0.00

\*180\*

QC

Quality Control

Memo

0.00

MLJ 12/08/20

MLJ 12/08/20

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____			DISPOSITION			AGAINST DEPARTMENT/PROCESS					
			Rework <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>				
Part No. _____			Scrap <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Quality <input type="checkbox"/>				
NCR No. _____			Use-as-is <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>				
Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector	
Doc/Data											
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											
FAULT CATEGORY											
Landing Gear				General							
				Bending <input type="checkbox"/>	Bend <input type="checkbox"/>	Grain <input type="checkbox"/>	Ovalized <input type="checkbox"/>	Pressure/Forced <input type="checkbox"/>			
				Centre Not Concentric to O/S <input type="checkbox"/>	BOM/Route <input type="checkbox"/>	Hardware <input type="checkbox"/>	Over/Under tolerance <input type="checkbox"/>	Temperature/Cure <input type="checkbox"/>			
				Cracks <input type="checkbox"/>	Broken/Damaged <input type="checkbox"/>	Inspection Incomplete <input type="checkbox"/>	Part Incorrect <input type="checkbox"/>	Weld <input type="checkbox"/>			
				Crushed/Crimped. <input type="checkbox"/>	Burrs <input type="checkbox"/>	Instructions Incomplete/Unclear <input type="checkbox"/>	Part Lost/Missing <input type="checkbox"/>	Wrong Stock Pulled <input type="checkbox"/>			
				Cuffs <input type="checkbox"/>	Contamination <input type="checkbox"/>	Maintenance <input type="checkbox"/>	Part Moved <input type="checkbox"/>				
				Heat Treat <input type="checkbox"/>	Countersink <input type="checkbox"/>	Mislabeled <input type="checkbox"/>	Positioned Wrong <input type="checkbox"/>				
				Inspection Strip in Tube <input type="checkbox"/>	Cut Too Short <input type="checkbox"/>	Misread <input type="checkbox"/>	Power Loss/Surge <input type="checkbox"/>	Other <input type="checkbox"/>			
				Ripples in Bend <input type="checkbox"/>	Drill Holes <input type="checkbox"/>	Offset <input type="checkbox"/>					
				Torque Waves in Extrusion <input type="checkbox"/>	Drawing <input type="checkbox"/>	Out of Calibration <input type="checkbox"/>					
				Turning Sequence <input type="checkbox"/>	Finish <input type="checkbox"/>	Out of Sequence <input type="checkbox"/>					
				Wave/Twist in Tube <input type="checkbox"/>	Folio <input type="checkbox"/>	Outside Dimensions <input type="checkbox"/>					

# Picklist Print

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Page 1

Work Order ID: 87562

Parent Item: D212-664-101TRN

Start Date: 7/20/12

Required Date: 8/17/12

Parent Item Name: Crosstube Turning Detail

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A 08-03-06 new issue DD verified by:ec  
IPP Rev B 08.04.02 removed Polish EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6005-128 Crosstube Material		Manufactured	No			120	Each	12.0000	1	1			

Location                    Loc Qty                    Loc Code

LG                                12  
69796                            12

—1— man L 12/08/02

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____	<b>DISPOSITION</b>				<b>AGAINST DEPARTMENT/PROCESS</b>				
Part No. _____	Rework	<input type="checkbox"/>	Skid-tube	<input type="checkbox"/>	Crosstube	<input type="checkbox"/>	Water Jet	<input type="checkbox"/>	Engineering
NCR No. _____	Scrap	<input type="checkbox"/>	Machining	<input type="checkbox"/>	Small Fab	<input type="checkbox"/>	Prod. Eng. Coor.	<input type="checkbox"/>	Quality
	Use-as-is	<input type="checkbox"/>	Thermoforming	<input type="checkbox"/>	Finishing	<input type="checkbox"/>	Rec/Store/Packaging	<input type="checkbox"/>	Other
	Work Order Update	<input type="checkbox"/>	Large Fab	<input type="checkbox"/>	Composite	<input type="checkbox"/>	Supplier	<input type="checkbox"/>	

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling									
Operator									
Material									
Setup									
Other									
Process									
Supplier									
Training									
Unapproved									

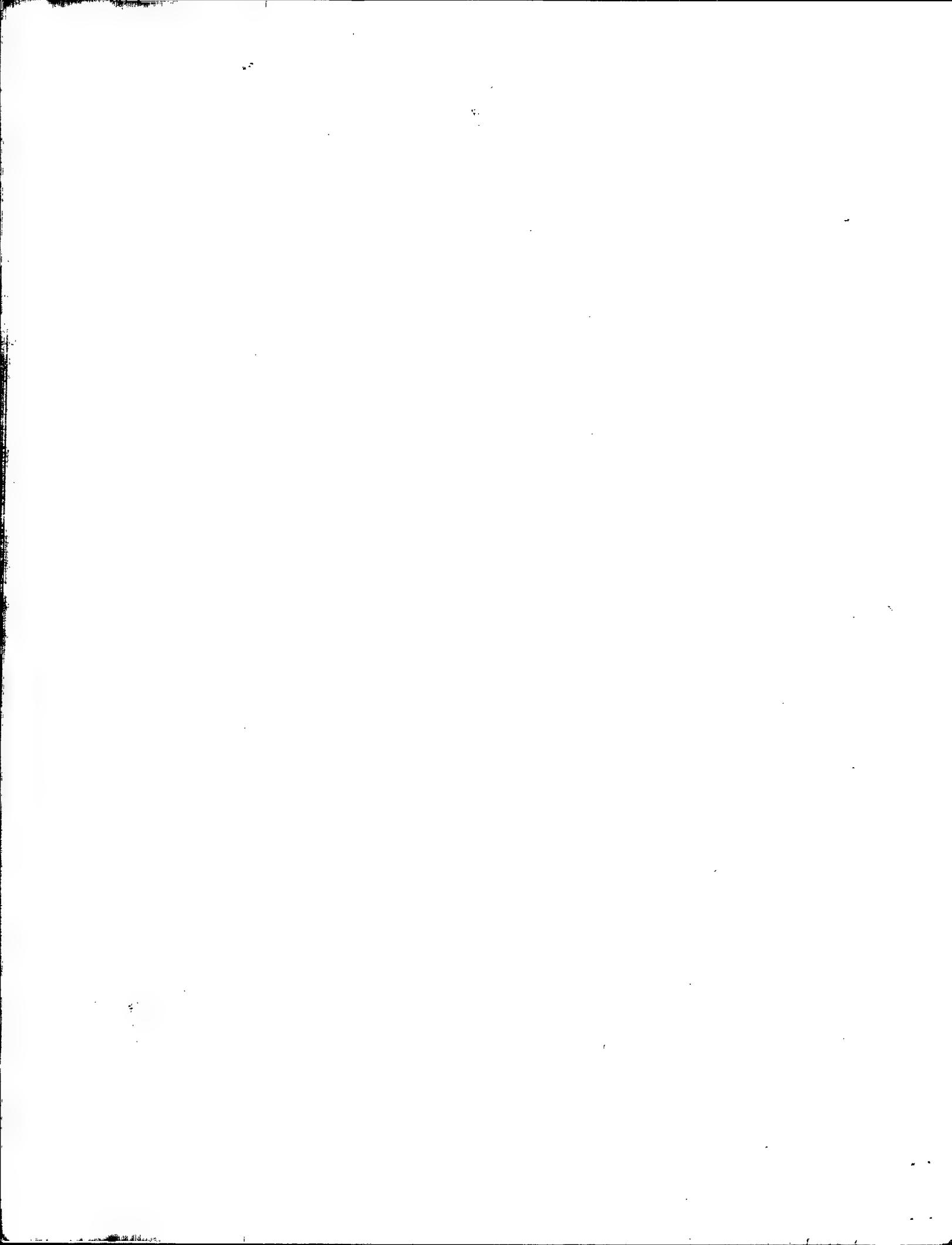
**FAULT CATEGORY**

Landing Gear	General	Grain	Ovalized	Pressure/Forced
Bending	Bend	Grain	Over/Under tolerance	Temperature/Cure
Centre Not Concentric to O/S	BOM/Route	Hardware	Part Incorrect	Weld
Cracks	Broken/Damaged	Inspection Incomplete	Part Lost/Missing	Wrong Stock Pulled
Crushed/Crimped	Burrs	Instructions Incomplete/Unclear	Part Moved	
Cuffs	Contamination	Maintenance	Positioned Wrong	
Heat Treat	Countersink	Mislabeled	Power Loss/Surge	Other
Inspection Strip in Tube	Cut Too Short	Misread		
Ripples in Bend	Drill Holes	Offset		
Torque Waves in Extrusion	Drawing	Out of Calibration		
Turning Sequence	Finish	Out of Sequence		
Wave/Twist in Tube	Folio	Outside Dimensions		

DART AEROSPACE LTD	Work Order:	E7562
Description: Crosstube Assembly (205/212/412 High Fwd)	Part Number:	D212-664-141
Inspection Dwg: D212-664-141 Rev: D		Page 1 of 2

FIRST ARTICLE

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Comments
SIDE A	0.200	+/-0.010	2.00
	R0.063	+/-0.010	.063
	2.740	+0.005/-0.000	2.74
	5.097	+/-0.030	5.11
	2.304	+0.005/-0.000	2.30
	2.340	+0.005/-0.000	2.30
	2.398	+0.005/-0.000	2.41
	2.448	+0.005/-0.000	2.45
	2.498	+0.005/-0.000	2.50
	2.549	+0.005/-0.000	2.55
	2.599	+0.005/-0.000	2.60
	2.671	+0.005/-0.000	2.67
	2.701	+0.005/-0.000	2.705
SIDE B	0.200	+/-0.010	2.00
	R0.063	+/-0.010	.063
	2.740	+0.005/-0.000	2.741
	5.097	+/-0.030	5.108
	2.304	+0.005/-0.000	2.305
	2.340	+0.005/-0.000	2.341
	2.398	+0.005/-0.000	2.403
	2.448	+0.005/-0.000	2.453
	2.498	+0.005/-0.000	2.503
	2.549	+0.005/-0.000	2.553
	2.599	+0.005/-0.000	2.602
	2.671	+0.005/-0.000	2.673
	2.701	+0.005/-0.000	2.704
	126.514	+/-0.020	126.520



DART AEROSPACE LTD

Work Order:

E7562

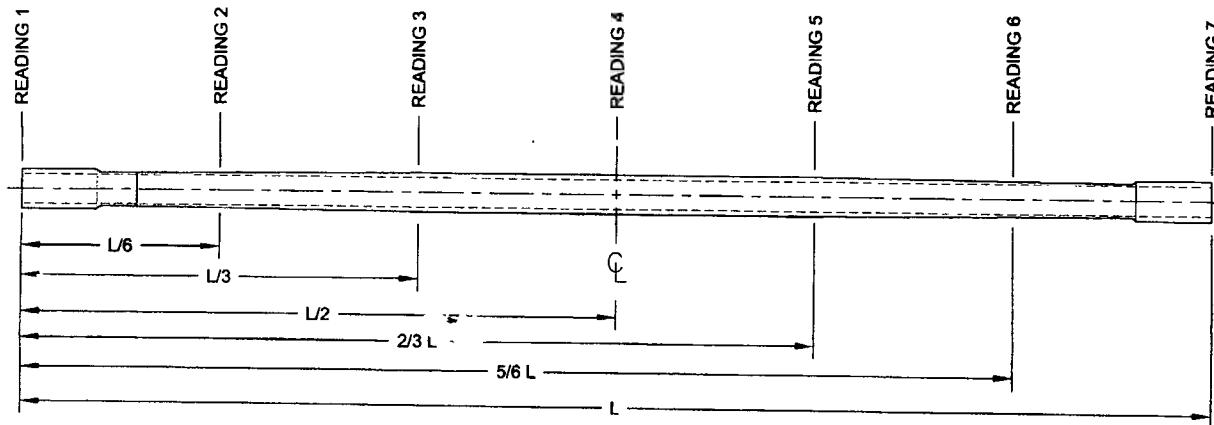
Description: Crosstube Assembly (205/212/412 High Fwd)

Part Number:

D212-664-141

Inspection Dwg: D212-664-141 Rev: D

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WALL THICKNESS MEASUREMENT

Location	WALL THICKNESS MEASUREMENT (IN)				Deviation $\Delta w$ (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.381	.371	.373	.382	.011	
READING 2 L=	.271	.245	.228	.249	.043	
READING 3 L=	.373	.358	.346	.350	.027	
READING 4 L=	.396	.384	.381	.386	.015	0.048"
READING 5 L=	.360	.341	.357	.374	.016	
READING 6 L=	.257	.231	.242	.267	.036	
READING 7 L=	.388	.364	.396	.384	.032	

## Calibration Result

Actual Block Thickness: 100-500Sitescan 250 Measured Thickness: 100-500

Measured by:	KC
Date:	12-8-15

Audited by:	JW
Date:	12-8-15

Preliminary Approval:	
Date:	12-8-15

Rev	Date	Change	Revised by	Approved
A	05.04.27	New Issue (P/O D412-664-101)	KJ/JLM	
B	06.03.15	Tolerance revised for 5.097 per Dwg Rev update	KJ/JLM	
C	07.05.28	Dwg Rev updated	KJ/JLM	
D	10.02.02	Dimension 126.514 was 126.51	KJ	
E	12.06.04	Wall thickness form added	KJ	



Item	Qty -141	Qty -141B	Part Number	Description
1	X		D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		X	D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3	1	1	D6005-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	4	4	MS21920-25	CLAMP (OR MS21920-26)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6005-128  
FINISHED LENGTH = 126.514±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS
- 7) WEIGHT: D212-664-141 = 33.6 lbs (PER IIN-D212-664)  
D212-664-141B = 33.6 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION A/Prior TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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WORK ORDER

NO. 07562 MCJ

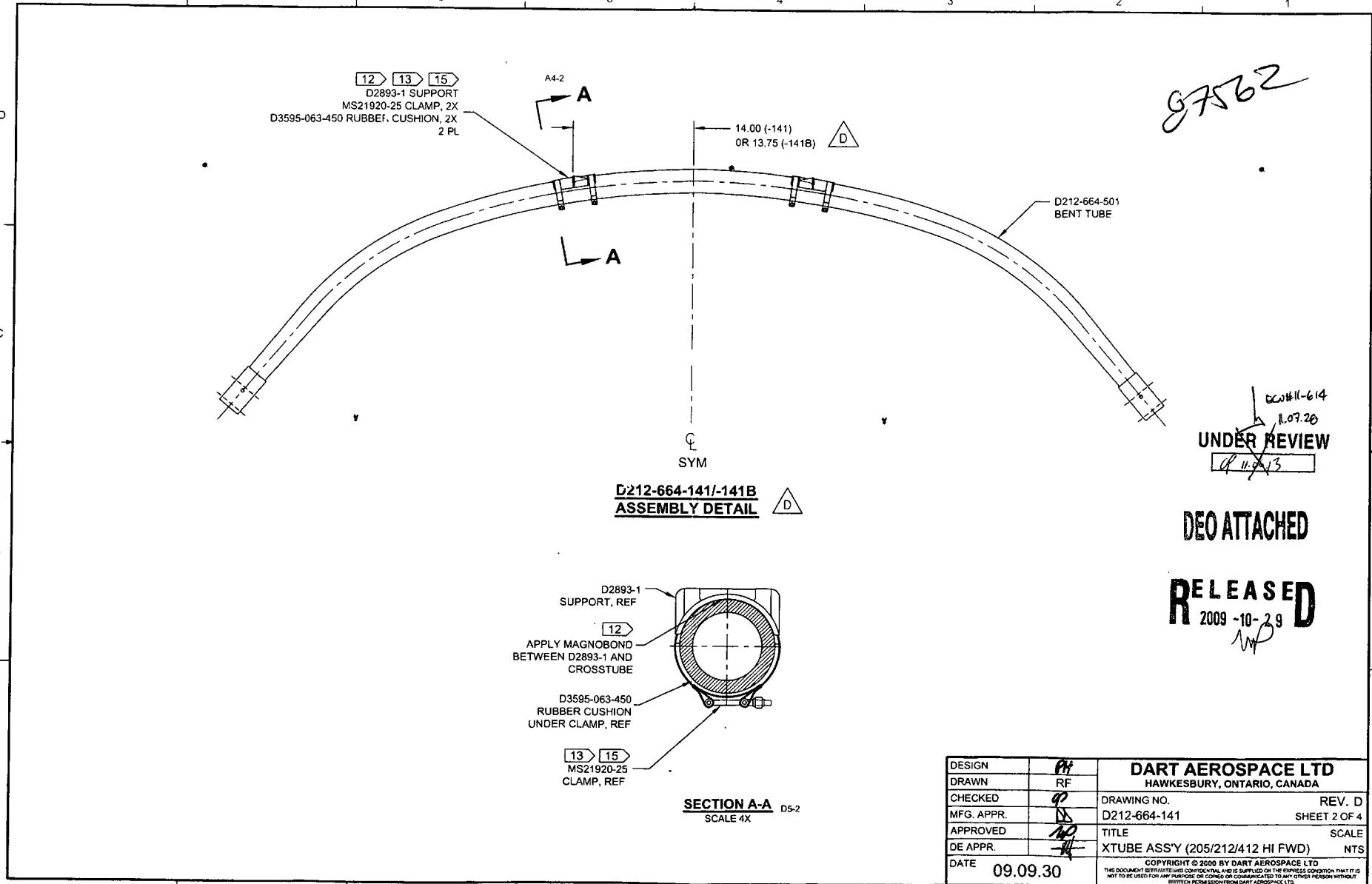
12/07/20

REMOVED FROM UNDER REVIEW 9/22  
UNDER REVIEW  
IIN-13 FOR PAY SEALING SNAPT 12/07/20

DEO ATTACHED

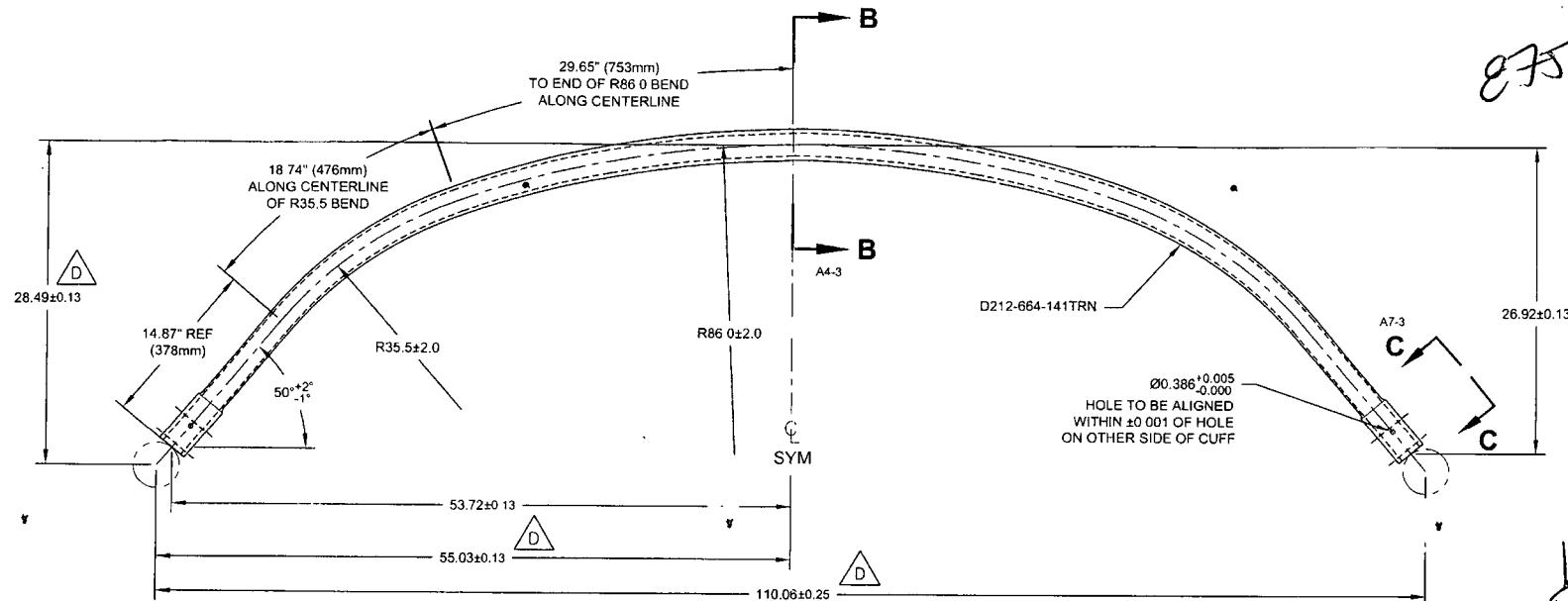
RELEASED  
2009-10-29  
M

D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B6-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	P	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	P	DRAWING NO.	REV. D
MFG. APPR.	D	D212-664-141	SHEET 1 OF 4
APPROVED	P	TITLE	SCALE
DE APPR.	P	XTUBE ASS'Y (205/212/412 HI FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS EXPIRED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	





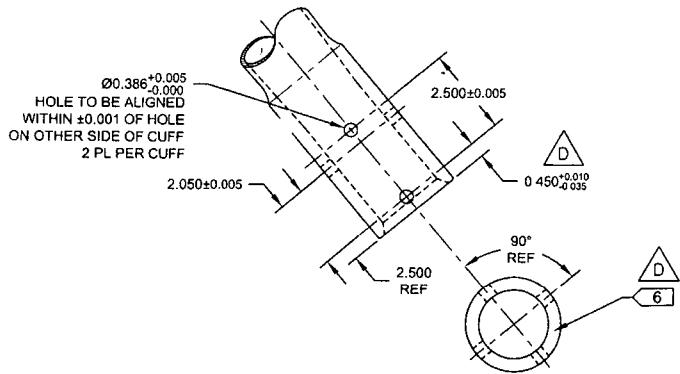
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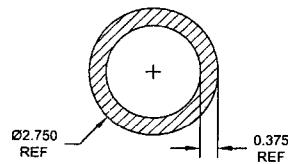
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01/10613

**DEO ATTACHED**

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2009-10-29  
*[Signature]*

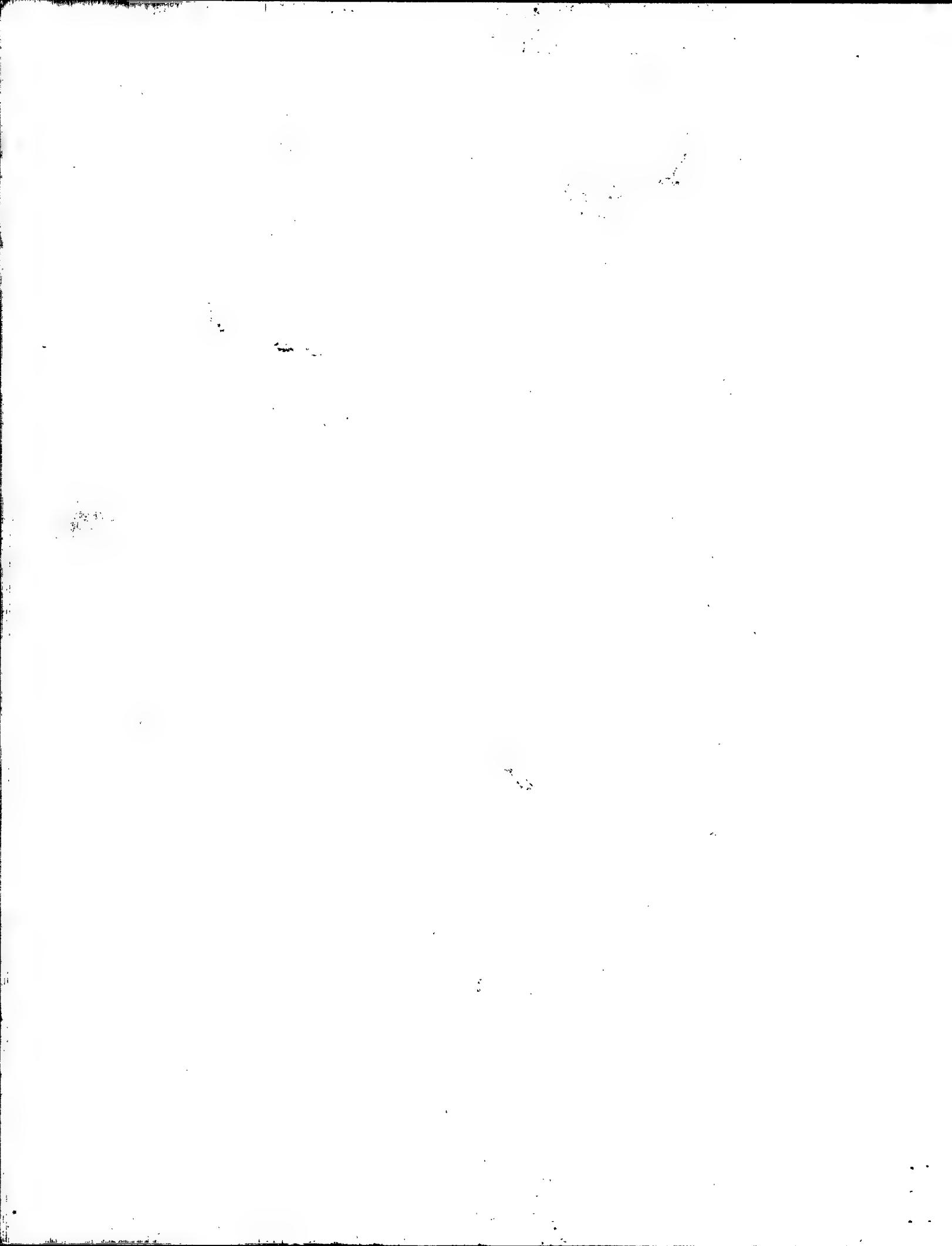


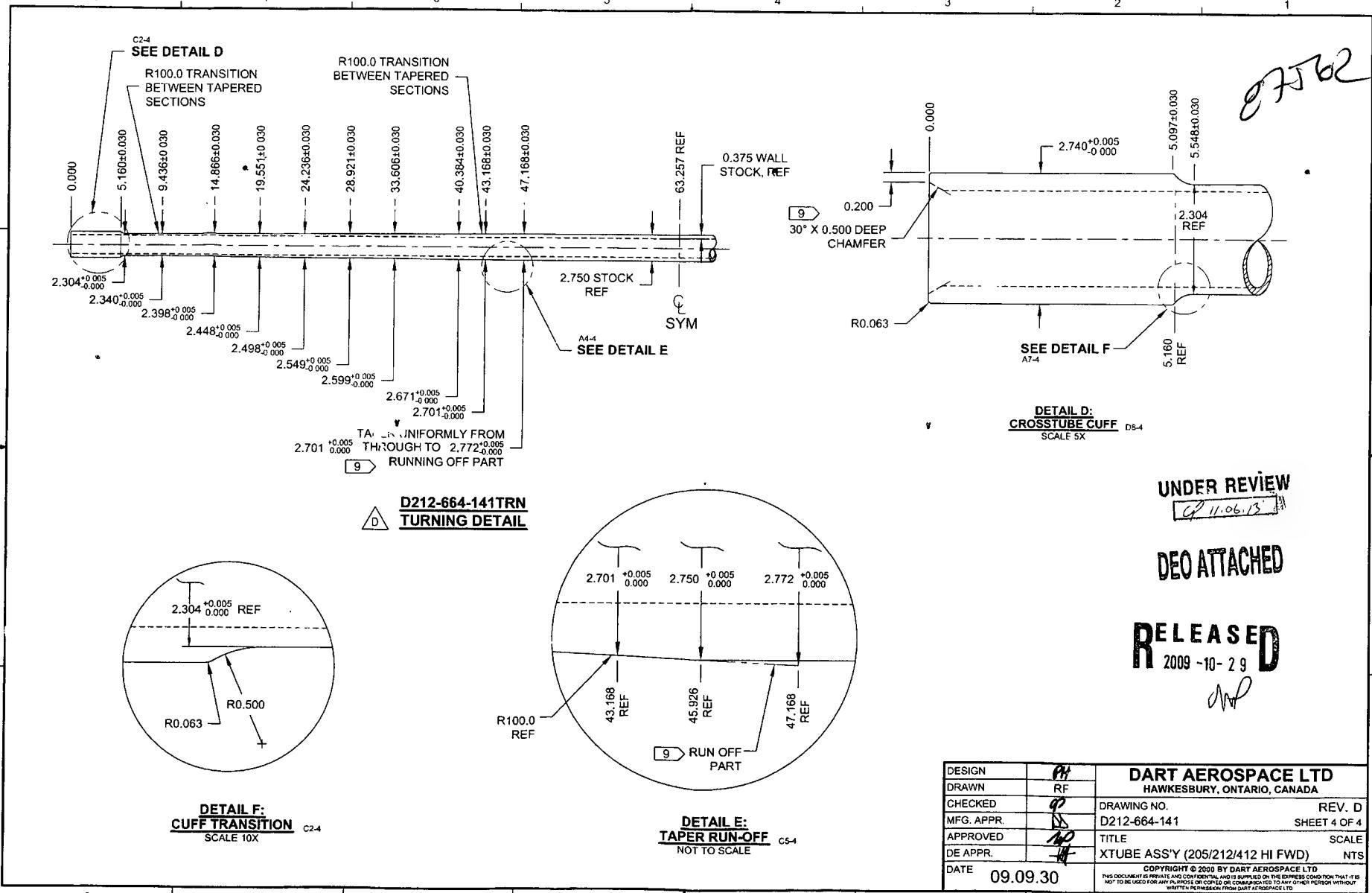
**VIEW C-C: CUFF DETAIL** C2-3  
SCALE 3X



**SECTION B-B** C4-3  
SCALE 4X

DESIGN	<u>PH</u>	DART AEROSPACE LTD		
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA		
CHECKED	<u>Q</u>	DRAWING NO.	REV. D	
MFG. APPR.	<u>DA</u>	D212-664-141	SHEET 3 OF 4	
APPROVED	<u>AD</u>	TITLE	SCALE	
DE APPR.	<u>ST</u>	XTUBE ASSY (205/212/412 HI FWD)	NTS	
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87562

DRAWING NO. D212-664-141	TITLE XTUBE ASSY (205/212/412 HI FWD)	REV. D	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D212-664-141-D-1	SHEET NO. SHEET 1 OF 2	SCALE NTS
DRAWN	CHECKED	MFG. APPR.	APPROVED	DE APPR.		
DATE 11.04.07	DATE 11.04.11	DATE 11.04.12	DATE 11/04/12	DATE 11.04.12		

PURPOSE:  
ADD AN INSPECTION WINDOW TO UNDERSIDE OF CROSSTUBE.

CHANGE:

NOTES 2 OF SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
 MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND  
 PAINT OUTSIDE PER DART QSI 005 4.2  
 REMOVE MASKING AND APPLY CLEAR COAT

WAS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
 PAINT OUTSIDE PER DART QSI 005 4.2

RELEASED  
2011-04-18

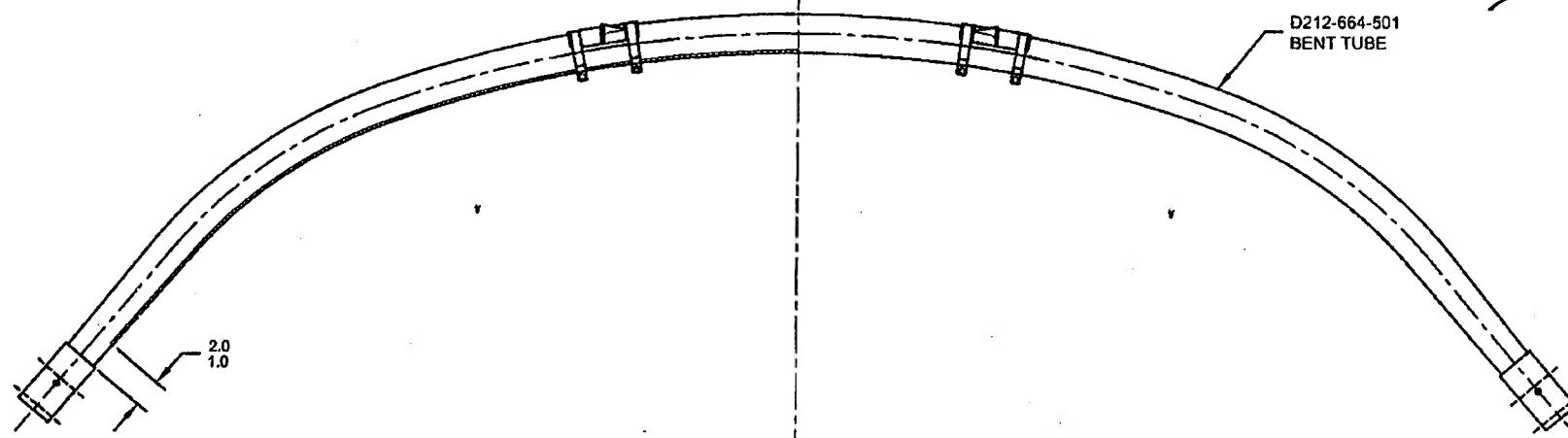
UNDER REVIEW

11/06/13  
ECW 11-664  
11.07.28

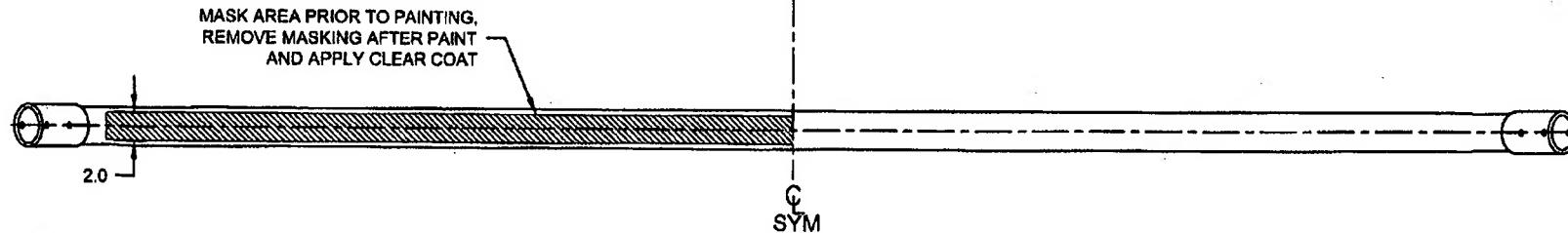


E7562

DRAWING NO. D212-664-141	TITLE XTUBE ASSY (205/212/412 HI FWD)	REV. D	<b>DART AEROSPACE LTD ENGINEERING ORDER</b>	D.E.O. NO. D212-664-141-D-1	SHEET NO. SHEET 2 OF 2	SCALE NTS
DRAWN DATE 11.04.07	CHECKED <i>GP</i>	MFG. APPR. <i>E</i>	APPROVED <i>WAD</i>	DE APPR. <i>WAD</i>		
	DATE 11.04.11	DATE 11.04.12	DATE 11.04.12	DATE 11.04.12	DATE 11.04.12	

**UNDER REVIEW***GP 11/06/13**ECN# H-614**11.07.28*IS:WAS:

**D212-664-141/141B  
ASSEMBLY DETAIL**





CT562

DRAWING NO. D212-664-141	TITLE CROSSTUBE ASS'Y (205 HI FWD)	REV. D	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D212-664-141-D-2	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>IP</i>	CHECKED <i>A&gt;S</i>	MFG. APPR. <i>AS</i>	APPROVED <i>MM</i>	DE APPR. <i>HF</i>			
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21	DATE 11.07.21			

**PURPOSE:**

REPLACE MAGNOBOND WITH PROSEAL.

**CHANGE:****IS:**

Item	Qty -141	Qty -141B	Part Number	Description
7	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

**WAS:**

7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
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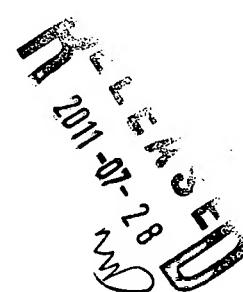
NOTE 12 &amp; 15, SHEET 1 IS AMENDED AS FOLLOWS:

**IS:**

- 12) TO INSTALL D2893-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-Grit SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

**WAS:**

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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